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FOREST STATISTICS FOR CUMBERLAND MOUNTAINS SECTION, WEST VIRGINIA

Northeastern
Forest Experiment Station
Upper Darby, Pa.
V.L. Harper, Director

FOREST SURVEY RELEASE No. 8

JULY 1949

This is the eighth in a series of Forest Survey statistical releases to be published by the Northeastern Forest Experiment Station. The prior releases in the series are:

No. 1 - Forest Resources of Elk, Forest, McKean, and Warren Counties, Pennsylvania

No. 2 - Forest Statistics for Pendleton, Pocahontas, and Randolph Counties, West Virginia

No. 3 - Forest Statistics for Northern New Hampshire

No. 4 - Forest Statistics for Hancock County, Maine

No. 5 - Forest Statistics for Southern New Hampshire

No. 6 - Forest Statistics for Monongahela Section, West Virginia

No. 7 - Forest Statistics for Southeastern West Virginia

FOREWORD

This release contains statistics on forest area and timber volumes in Boone, Kanawha, Lincoln, Logan, McDowell, Mingo, Wayne, and Wyoming Counties, West Virginia. It includes 8 statistical tables on forest area and 15 tables on timber volumes. These tables are followed by a brief description of Forest Survey procedure and by estimates of the accuracy of forest-area and timber-volume figures. Because many of the terms used in this release have special meanings, an explanation of the terms used may be found at the end of the report.

This report was prepared by the Forest Survey organization at the Northeastern Forest Experiment Station under the direction of Frank A. Ineson, assisted by Harry W. Camp, Jr., in charge of inventory; Roland H. Ferguson, in charge of compilations; and Carl J. Holcomb, field supervisor. Volume table and accuracy analyses were made by C. Allen Bickford. The field inventory in these counties was completed in March 1949. Field work was conducted by Adrian M. Gilbert, Ted J. Grisez, Frederick E. Hampf, and Robert D. Wray of the Forest Survey. They were assisted by Gordon H. Hubbard, Robert C. Kletzly, Theodore R. Samsell, and Carroll M. Smithson of the West Virginia Conservation Commission.

This is the fourth in a series of similar reports that are planned for other county groups within West Virginia. After survey findings for all the counties in the entire State have been reported in this manner, a statistical report will be issued presenting the findings of the Forest Survey for the State as a whole on growth and commodity drain as well as on forest area and timber volume. Later a comprehensive report will be published; in this the current forest situation and prospective changes will be analyzed.

The Forest Survey is conducted in the various forest regions by the forest experiment stations of the Forest Service. The project in the Northeast is directed by the Northeastern Forest Experiment Station with regional headquarters in Upper Darby, Pennsylvania.

Many individuals and organizations in West Virginia were active in facilitating the forest survey. The Station appreciates their cooperation. Special acknowledgment is due the West Virginia Conservation Commission for making aerial photographs available and for collaboration through the assignment of personnel in a joint forest and game-habitat survey.

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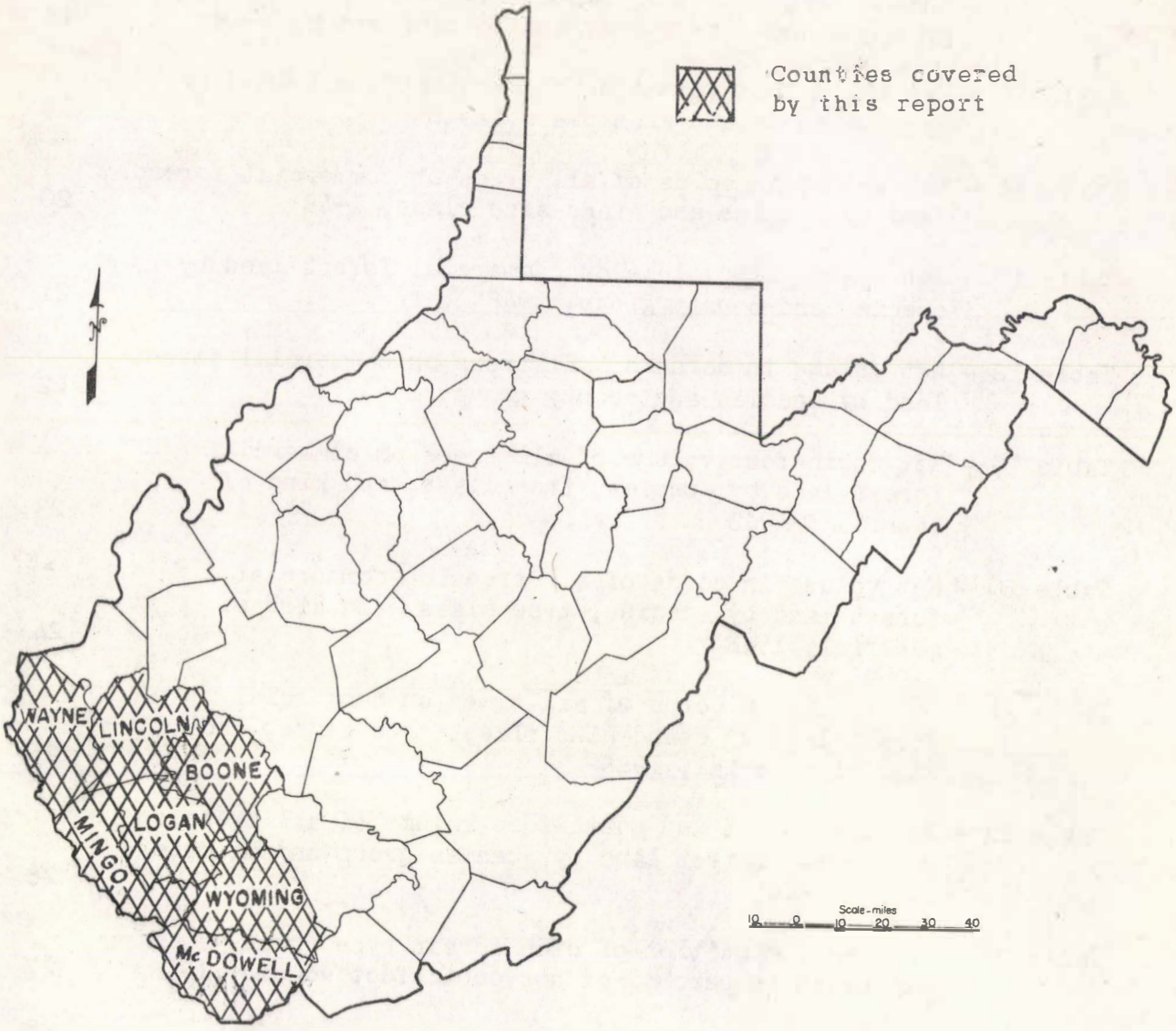
FOREST SURVEY IN WEST VIRGINIA

JULY 1949



Northeastern Forest Experiment Station

FOREST STATISTICS FOR CUMBERLAND MOUNTAINS SECTION, WEST VIRGINIA

compiled by

Forest Survey Staff
Northeastern Forest Experiment Station

SALIENT STATISTICS

The eight counties[1/] included in the Cumberland Mountains section of West Virginia have a total land area of 2,736,600 acres. The area is drained chiefly by the Big Sandy and Guyandot Rivers and, to a lesser extent, by the Kanawha River. The land is generally rugged except for the flood plains of the larger rivers. The mountains have steep slopes and sharp ridges, and most of the valleys are narrow. The average elevation is about 1,250 feet, although in three of the counties the mountains rise to more than 3,300 feet. Annual precipitation averages about 37 inches, 6 inches less than the average for the State as a whole.

This section includes about 18 percent of the land area of West Virginia but in 1940 had 27 percent of the State's population. This high proportion of population to area is due to several factors: Charleston, the State capitol, is located in this section; the banks of the Kanawha River are lined with industrial developments; coal mining is intensive throughout most of the area.

Of the 515,000 people in this area in 1940, 24 percent were city-dwellers, 19 percent were farmers, and 57 percent lived in rural areas but did not farm. Neither Boone nor Lincoln Counties had any urban population.

Coal mining is the major industry in all the counties but Wayne. Many industrial plants are located along the Kanawha River, taking advantage of the ready supply of coal for power and heat and the cheap barge transportation. Agriculture is restricted mostly to livestock raising and general farming, although some tobacco growing is scattered throughout the area.

1/ Boone, Kanawha, Lincoln, Logan, McDowell, Mingo, Wayne, and Wyoming Counties.

The road system is generally poorer in this section than in other parts of the State. The abandonment of a considerable amount of crop and pasture land has resulted in decreased maintenance in some of the more remote areas, while the main roads receive constant hard usage from heavily loaded coal trucks. The area is served by five major railroads.

Eighty-one percent of the entire area is forested; the five southern counties are the more heavily forested. One hundred acres of productive forest land are reserved from cutting. The remaining 2,224,000 acres are classified as commercial forest land.

Forest land ownership.--Of the commercial forest land, 22 percent is in farm woodland, 77 percent is held in other private ownership, and 1 percent is publicly owned. There is no Federally owned forest land in this area.

Forest type groups.--The forest types of this eight-county area have been combined into five type groups: oak-hickory, cove hardwood, northern hardwood, chestnut oak, and pine-oak.

Forty-two percent of the commercial forest land is in the oak-hickory group, which includes the red oak and the white oak types. The predominant species in this type group is red oak, followed by white oak, hickory, chestnut oak, and beech.

The cove hardwood type group is made up almost entirely of the cove hardwood type itself. This type comprises 30 percent of the commercial forest area. It usually occurs on deep, moist soils in the coves and extends up the lower slopes. The boundary between the cove hardwood type and the northern hardwood and oak-hickory types is seldom distinct. The latter types are generally located on the slopes above the coves. Species such as beech, hickory, red oak, basswood, and sugar maple are commonly found intermingled with yellow-poplar in the coves of this section.

The northern hardwood type occupies 11 percent of the commercial forest area. More than half the volume in this type is in beech. The common associates are sugar maple, hickory, basswood, and yellow-poplar.

The chestnut oak type occurs on 11 percent of the commercial forest area and is found on the high, dry, rocky ridges. Chestnut oak predominates, usually associated with red oak and hickory.

The pine-oak type group comprises the remaining 6 percent of the commercial forest area. The predominant species in this group are yellow pines (pitch pine and Virginia pine), followed by red oak, hemlock, and chestnut oak. These types usually occur on drier slopes.

Site quality.--Forest soils differ in productivity. In order to

compare the relative productivity of various sites, arbitrary standards have been established. These are based on differences in tree height growth. About 21 percent of the commercial forest area is considered capable of producing hardwood saw-timber trees containing three or more 16-foot logs or softwood trees containing five or more 16-foot logs. Seventy-four percent is rated as fair site, capable of producing hardwood saw-timber trees containing one and one-half to three 16-foot logs or softwood saw-timber trees containing three to five 16-foot logs. The remaining 5 percent is classified as poor site but is considered capable of producing trees with at least one 8-foot merchantable log.

Stand-size classes.--The forests of the Cumberland Mountains section have been high-graded, cut-over, and burned repeatedly in the past. As a result lumbering is no longer a major industry in spite of the large proportion of forest land. Mine timber is the major forest product in this section, and trees often are cut as soon as they reach prop size.

About 52 percent of the commercial forest land is in saw-timber stands of 1,500 or more board feet per acre. Pole-timber stands, at least 10 percent stocked with trees 5.0 inches or more in diameter, account for 27 percent of the commercial forest area. The remaining 21 percent is comprised of seedling and sapling, and poorly stocked stands.

Medium and heavy saw-timber stands (5,000 board feet or more per acre) have an average volume of 7,650 board feet and 12 cords of other material. Light saw-timber stands (1,500 to 5,000 board feet per acre) average 3,260 board feet plus 8 cords of smaller material. Pole-timber stands contain 570 board feet in sawlog volume and 7 cords of other material.

Sawlog volume.--The total live-tree sawlog volume on all commercial forest land is 5,685,600,000 board feet. In addition, there are 137,300,000 board feet of dead chestnut. Although 91 percent of the live-tree sawlog volume is found in saw-timber stands, it is not economical to log much of this material at present. A considerable part of it is in scattered low-quality trees left from earlier logging operations. Hardwoods make up 94 percent of the live-tree sawlog volume. Red oak, beech, chestnut oak, and hickory are the most abundant species. The softwood sawlog volume is made up entirely of the yellow pines and hemlock.

About 19 percent of the softwood sawlog volume is in trees 20 inches and more in diameter; 42 percent of the hardwood sawlog material is in trees of this size.

All sawlog volumes are net; deductions have been made for rot, crook, and other defects. Average cull in softwood sawlog material is 5 percent, and in hardwood, 15 percent.

Volume in cords.--The volume in all live trees 5.0 inches and more in diameter is 29,273,000 cords. In addition, there are 640,000 cords of dead chestnut. Sixty percent of the live-tree volume is in four hardwood species: red oak, beech, chestnut oak, and hickory; other hardwoods amount to 36 percent. Softwood volume accounts for the remaining 4 percent and is found in the yellow pines and hemlock.

About half of the softwood volume is found in trees less than 14 inches in diameter; 35 percent of the hardwood volume is found in trees of this size.

Cubic-foot volume.--The total solid wood content of all live trees 5.0 inches and more in diameter is 1,916,800,000 cubic feet or about 860 cubic feet per acre of commercial forest land. Of the total cubic-foot volume, 46 percent is in sawlog material, 15 percent is in the upper stems and limbs of saw-timber trees, 23 percent is in pole-timber trees, and 16 percent in the sound volume of cull trees.

Table 1.--Commercial and noncommercial forest area by county group, 1948

Kind of land	Boone Kanawha	Lincoln Wayne	Logan Mingo	McDowell Wyoming	Total	
	Acres	Acres	Acres	Acres	Acres	Percent
Forest:						
Commercial	728,600	436,800	493,800	564,800	2,224,000	81.3
Noncommercial:						
Reserved productive	100	--	--	--	100	--
Nonproductive	--	--	--	--	--	--
Total	100	--	--	--	100	--
Total forest	728,700	436,800	493,800	564,800	2,224,100	81.3
Nonforest	173,100	171,800	68,700	98,900	512,500	18.7
All land 1/	901,800	608,600	562,500	663,700	2,736,600	100.0

1/ From Areas of the United States, 1940, Bureau of the Census.

Table 2.--Forest and nonforest area by county, 1948

County	Forest area 1/		Nonforest area		Total land area
	Acres	Percent	Acres	Percent	Acres
Boone	289,600	90.3	31,100	9.7	320,700
Kanawha	439,100	75.6	142,000	24.4	581,100
Lincoln	212,600	75.8	67,700	24.2	280,300
Logan	253,800	87.0	38,000	13.0	291,800
McDowell	290,700	85.2	50,400	14.8	341,100
Mingo	240,000	88.7	30,700	11.3	270,700
Wayne	224,200	68.3	104,100	31.7	328,300
Wyoming	274,100	85.0	48,500	15.0	322,600
Total	2,224,100	81.3	512,500	18.7	2,736,600

1/ Includes both commercial and noncommercial forest area.

Table 3.--Commercial forest area by ownership class and county group, 1948

Ownership class	Boone Kanawha	Lincoln Wayne	Logan Mingo	McDowell Wyoming	Total	
	Acres	Acres	Acres	Acres	Acres	Percent
Federal:						
National forest	--	--	--	--	--	--
Other	--	--	--	--	--	--
Total Federal	--	--	--	--	--	--
State, county, and municipal	7,000	6,400	--	7,700	21,100	0.9
Private:						
Farm woodland[1/]	123,200	172,500	78,200	121,400	495,300	22.3
Other	598,400	257,900	415,600	435,700	1,707,600	76.8
Total private	721,600	430,400	493,800	557,100	2,202,900	99.1
All ownerships	728,600	436,800	493,800	564,800	2,224,000	100.0

1/ Census of Agriculture: 1945.

Table 4.--Commercial forest area by forest type and county group, 1948

Forest type	Boone Kanawha	Lincoln Wayne	Logan Mingo	McDowell Wyoming	Total	
	Acres	Acres	Acres	Acres	Acres	Percent
Pine-oak:						
Hemlock	4,900	--	--	6,200	11,100	0.5
Pitch pine	26,500	5,700	5,900	--	38,100	1.7
Hard pine-oak	63,500	21,800	--	--	85,300	3.8
Total	94,900	27,500	5,900	6,200	134,500	6.0
Northern hardwood	53,400	38,800	71,700	78,600	242,500	10.9
Cove hardwood:						
Cove hardwood	168,700	118,600	191,100	192,600	671,000	30.2
River birch-sycamore	5,000	--	--	--	5,000	.2
Total	173,700	118,600	191,100	192,600	676,000	30.4
Chestnut oak	69,000	17,900	55,100	94,600	236,600	10.7
Oak-hickory:						
White oak	111,500	94,800	6,500	13,100	225,900	10.2
Red oak	226,100	139,200	163,500	179,700	708,500	31.8
Total	337,600	234,000	170,000	192,800	934,400	42.0
All types	728,600	436,800	493,800	564,800	2,224,000	100.0

Table 5.--Commercial forest area by county group, forest type group, and stand-size class, 1948

BOONE - KANAWHA COUNTIES

Stand-size class	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
Saw-timber stands:						
Medium and heavy	14,600	9,800	32,300	--	36,200	92,900
Light	21,700	13,500	65,300	43,700	172,200	316,400
Pole-timber stands	32,300	30,100	55,400	19,400	75,300	212,500
Seedling and sapling	14,600	--	14,600	5,900	48,200	83,300
Poorly stocked stands	11,700	--	6,100	--	5,700	23,500
All stands	94,900	53,400	173,700	69,000	337,600	728,600
LINCOLN - WAYNE COUNTIES						
Saw-timber stands:						
Medium and heavy	--	4,700	--	--	--	4,700
Light	--	21,900	22,000	10,900	71,600	126,400
Pole-timber stands	12,300	12,200	34,800	--	82,700	142,000
Seedling and sapling	8,200	--	20,700	--	28,900	57,800
Poorly stocked stands	7,000	--	41,100	7,000	50,800	105,900
All stands	27,500	38,800	118,600	17,900	234,000	436,800
LOGAN - MINGO COUNTIES						
Saw-timber stands:						
Medium and heavy	5,900	38,400	19,200	12,600	31,800	107,900
Light	--	12,800	81,800	13,100	101,800	209,500
Pole-timber stands	--	20,500	35,300	6,900	13,900	76,600
Seedling and sapling	--	--	45,200	22,500	22,500	90,200
Poorly stocked stands	--	--	9,600	--	--	9,600
All stands	5,900	71,700	191,100	55,100	170,000	493,800
McDOWELL - WYOMING COUNTIES						
Saw-timber stands:						
Medium and heavy	--	25,700	45,900	22,000	23,900	117,500
Light	6,200	38,900	19,200	31,600	86,300	182,200
Pole-timber stands	--	14,000	73,100	21,100	57,300	165,500
Seedling and sapling	--	--	39,300	13,400	18,900	71,600
Poorly stocked stands	--	--	15,100	6,500	6,400	28,000
All stands	6,200	78,600	192,600	94,600	192,800	564,800

Table 6.--Commercial forest area by forest type group and stand-size class, 1948

Stand-size class	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
	Acres	Acres	Acres	Acres	Acres	Acres
Saw-timber stands:						
Medium and heavy	20,500	78,600	97,400	34,600	91,900	323,000
Light	27,900	87,100	188,300	99,300	431,900	834,500
Pole-timber stands	44,600	76,800	198,600	47,400	229,200	596,600
Seedling and sapling	22,800	--	119,800	41,800	118,500	302,900
Poorly stocked stands	18,700	--	71,900	13,500	62,900	167,000
All stands	134,500	242,500	676,000	236,600	934,400	2,224,000

Table 7.--Commercial forest area by forest type group and site class, 1948

Forest type group	Site class			All sites
	Good	Fair	Poor	
	Acres	Acres	Acres	Acres
Pine-oak	4,900	129,600	--	134,500
Northern hardwood	111,700	123,600	7,200	242,500
Cove hardwood	286,800	367,300	21,900	676,000
Chestnut oak	--	210,400	26,200	236,600
Oak-hickory	73,200	808,100	53,100	934,400
All types	476,600	1,639,000	108,400	2,224,000
Percent	21.4	73.7	4.9	100.0

Table 8.--Commercial forest area by watershed and stand-size class, 1948

Stand-size class	Watershed		Total	
	Kanawha	Big Sandy and Guyandot		
	Acres	Acres	Acres	Percent
Saw-timber stands:				
Medium and heavy	104,800	218,200	323,000	14.5
Light	333,600	500,900	834,500	37.6
Pole-timber stands	225,800	370,800	596,600	26.8
Seedling and sapling	91,500	211,400	302,900	13.6
Poorly stocked stands	23,500	143,500	167,000	7.5
All stands	779,200	1,444,800	2,224,000	100.0
Percent	35.0	65.0	100.0	--

Table 9.--Net board-foot volume on commercial forest land by forest type group, stand-size class, and species group, 1948

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.
Saw-timber stands:						
Medium and heavy						
Softwood	127,100	29,400	19,500	--	5,300	181,300
Hardwood	10,100	548,400	840,600	290,100	600,900	2,290,100
Total	137,200	577,800	860,100	290,100	606,200	2,471,400
Light						
Softwood	65,100	--	11,500	10,800	44,000	131,400
Hardwood	14,400	279,400	653,500	265,400	1,377,200	2,589,900
Total	79,500	279,400	665,000	276,200	1,421,200	2,721,300
Pole-timber stands						
Softwood	13,200	--	--	1,400	13,200	27,800
Hardwood	6,900	57,100	83,200	43,200	122,100	312,500
Total	20,100	57,100	83,200	44,600	135,300	340,300
Other stands 1/						
Softwood	800	--	--	--	--	800
Hardwood	--	--	16,100	35,000	100,700	151,800
Total	800	--	16,100	35,000	100,700	152,600
All stands						
Softwood	206,200	29,400	31,000	12,200	62,500	341,300
Hardwood	31,400	884,900	1,593,400	633,700	2,200,900	5,344,300
Total	237,600	914,300	1,624,400	645,900	2,263,400	5,685,600
Percent	4.1	16.1	28.6	11.4	39.8	100.0

1/ Includes seedling and sapling stands, poorly stocked stands, and unstocked areas.

Table 10.—Average net board-foot volume per acre on commercial forest land by forest type group, stand-size class, and species group, 1948

(Log scale, International 1/4-inch rule)

Stand-size class and species group	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.	Bd.ft.
Saw-timber stands:						
Medium and heavy						
Softwood	6,200	370	200	--	60	560
Hardwood	490	6,980	8,630	8,380	6,540	7,090
Total	6,690	7,350	8,830	8,380	6,600	7,650
Light						
Softwood	2,330	--	60	110	100	160
Hardwood	520	3,210	3,470	2,670	3,190	3,100
Total	2,850	3,210	3,530	2,780	3,290	3,260
Pole-timber stands						
Softwood	300	--	--	30	60	50
Hardwood	150	740	420	910	530	520
Total	450	740	420	940	590	570
Other stands						
Softwood	20	--	--	--	--	--
Hardwood	--	--	80	630	550	320
Total	20	--	80	630	550	320
All stands						
Softwood	1,530	120	50	50	70	150
Hardwood	230	3,650	2,350	2,680	2,350	2,400
Total	1,760	3,770	2,400	2,730	2,420	2,550

Table 11.--Net volume in cords of sawlog material on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
	M cords	M cords	M cords	M cords	M cords	M cords
Saw-timber stands:						
Medium and heavy						
Softwood	289	61	42	--	12	404
Hardwood	26	1,349	1,978	704	1,435	5,492
Total	315	1,410	2,020	704	1,447	5,896
Light						
Softwood	146	--	25	26	95	292
Hardwood	36	674	1,567	662	3,308	6,247
Total	182	674	1,592	688	3,403	6,539
Pole-timber stands						
Softwood	30	--	--	3	30	63
Hardwood	18	149	202	107	302	778
Total	48	149	202	110	332	841
Other stands						
Softwood	3	--	--	--	--	3
Hardwood	--	--	39	84	241	364
Total	3	--	39	84	241	367
All stands						
Softwood	468	61	67	29	137	762
Hardwood	80	2,172	3,786	1,557	5,286	12,881
Total	548	2,233	3,853	1,586	5,423	13,643
Percent	4.0	16.4	28.2	11.6	39.8	100.0

Table 12.--Average number of cords per acre of sawlog material on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
	Cords	Cords	Cords	Cords	Cords	Cords
Saw-timber stands:						
Medium and heavy						
Softwood	14.1	0.7	0.4	--	0.1	1.2
Hardwood	1.3	17.2	20.3	20.3	15.6	17.0
Total	15.4	17.9	20.7	20.3	15.7	18.2
Light						
Softwood	5.2	--	0.1	0.2	0.2	0.3
Hardwood	1.3	7.7	8.3	6.7	7.7	7.5
Total	6.5	7.7	8.4	6.9	7.9	7.8
Pole-timber stands						
Softwood	0.7	--	--	0.1	0.1	0.1
Hardwood	.4	1.9	1.0	2.2	1.3	1.3
Total	1.1	1.9	1.0	2.3	1.4	1.4
Other stands						
Softwood	0.1	--	--	--	--	--
Hardwood	--	--	0.2	1.5	1.3	0.8
Total	0.1	--	0.2	1.5	1.3	0.8
All stands						
Softwood	3.5	0.2	0.1	0.1	0.1	0.3
Hardwood	.6	9.0	5.6	6.6	5.7	5.8
Total	4.1	9.2	5.7	6.7	5.8	6.1

Table 13.--Net volume in cords of material other than sawlog on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
	M cords	M cords	M cords	M cords	M cords	M cords
Saw-timber stands:						
Medium and heavy						
Softwood	99	7	5	--	3	114
Hardwood	79	943	1,252	494	886	3,654
Total	178	950	1,257	494	889	3,768
Light						
Softwood	55	--	8	4	35	102
Hardwood	119	720	1,754	809	3,531	6,933
Total	174	720	1,762	813	3,566	7,035
Pole-timber stands						
Softwood	66	2	2	15	11	96
Hardwood	195	785	1,427	321	1,409	4,137
Total	261	787	1,429	336	1,420	4,233
Other stands						
Softwood	5	--	--	--	2	7
Hardwood	10	--	164	115	298	587
Total	15	--	164	115	300	594
All stands						
Softwood	225	9	15	19	51	319
Hardwood	403	2,448	4,597	1,739	6,124	15,311
Total	628	2,457	4,612	1,758	6,175	15,630
Percent	4.0	15.7	29.5	11.2	39.6	100.0

Table 14.--Average number of cords per acre of material other than sawlog on commercial forest land by forest type group, stand-size class, and species group, 1948

(Standard cords, including bark)

Stand-size class and species group	Forest type group					All forest types
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory	
	Cords	Cords	Cords	Cords	Cords	Cords
Saw-timber stands:						
Medium and heavy						
Softwood	4.8	0.1	--	--	--	0.4
Hardwood	3.9	12.0	12.9	14.3	9.6	11.3
Total	8.7	12.1	12.9	14.3	9.6	11.7
Light						
Softwood	2.0	--	--	--	0.1	0.1
Hardwood	4.2	8.3	9.3	8.1	8.2	8.3
Total	6.2	8.3	9.3	8.1	8.3	8.4
Pole-timber stands						
Softwood	1.5	--	--	0.3	--	0.2
Hardwood	4.4	10.2	7.2	6.8	6.2	6.9
Total	5.9	10.2	7.2	7.1	6.2	7.1
Other stands						
Softwood	0.1	--	--	--	--	--
Hardwood	.2	--	0.9	2.1	1.6	1.2
Total	0.3	--	0.9	2.1	1.6	1.2
All stands						
Softwood	1.7	--	--	0.1	--	0.1
Hardwood	3.0	10.1	6.8	7.3	6.6	6.9
Total	4.7	10.1	6.8	7.4	6.6	7.0

Table 15.--Net board-foot volume on commercial forest land by species and stand-size class, 1948

(Log scale, International 1/4-inch rule)

Species	Saw-timber stands	Pole-timber stands	Other stands	Total	
	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	Percent
Softwoods:					
Hemlock	91,500	7,500	--	99,000	1.7
Yellow pine	221,200	20,300	800	242,300	4.3
All softwoods	312,700	27,800	800	341,300	6.0
Hardwoods:					
Sugar maple	209,400	4,900	--	214,300	3.8
Red maple	69,400	2,400	--	71,800	1.3
Red oak	1,434,600	63,200	61,400	1,559,200	27.5
White oak	232,800	28,800	16,600	278,200	4.9
Chestnut oak	584,700	44,200	36,400	665,300	11.7
Yellow birch	29,600	6,600	--	36,200	.6
Beech	675,900	31,600	--	707,500	12.4
Ash	64,700	3,300	--	68,000	1.2
Basswood	159,500	3,400	4,300	167,200	2.9
Yellow-poplar	439,600	51,900	6,900	498,400	8.8
Cucumber	117,500	19,200	--	136,700	2.4
Hickory	532,600	28,600	23,000	584,200	10.3
Gum	222,200	10,500	3,200	235,900	4.1
Black walnut	37,500	--	--	37,500	.7
Black locust	34,000	--	--	34,000	.6
Other hardwoods	36,000	13,900	--	49,900	.8
All hardwoods	4,880,000	312,500	151,800	5,344,300	94.0
All species 1/	5,192,700	340,300	152,600	5,685,600	100.0
Percent	91.3	6.0	2.7	100.0	--

1/ In addition there are 137,300,000 board feet of dead chestnut: 122,500,000 in saw-timber stands, 1,600,000 in pole-timber stands, and 13,200,000 in poorly stocked stands.

Table 16.--Net volume in cords of all trees on commercial forest land by species and stand-size class, 1948

(Standard cords, including bark)

Species	Saw-timber stands	Pole-timber stands	Other stands	Total	
	M cords	M cords	M cords	M cords	Percent
Softwoods:					
Hemlock	228	23	--	251	0.9
Yellow pine	684	136	10	830	2.8
All softwoods	912	159	10	1,081	3.7
Hardwoods:					
Sugar maple	738	129	2	869	3.0
Red maple	509	123	7	639	2.2
Red oak	5,432	716	239	6,387	21.8
White oak	1,258	417	129	1,804	6.2
Chestnut oak	2,968	439	201	3,608	12.3
Yellow birch	299	150	2	451	1.5
Beech	3,364	1,112	36	4,512	15.4
Ash	307	76	7	390	1.3
Basswood	829	84	13	926	3.2
Yellow-poplar	1,682	518	74	2,274	7.8
Cucumber	395	74	--	469	1.6
Hickory	2,492	529	121	3,142	10.7
Gum	963	94	23	1,080	3.7
Black walnut	158	43	3	204	.7
Black locust	350	62	62	474	1.6
Other hardwoods	582	349	32	1/ 963	3.3
All hardwoods	22,326	4,915	951	28,192	96.3
All species 2/	23,238	5,074	961	29,273	100.0
Percent	79.4	17.3	3.3	100.0	--

1/ Includes 315,000 cords of so-called nonmerchantable species such as sassafras and sourwood.

2/ In addition there are 640,000 cords of dead chestnut: 553,000 in saw-timber stands, 17,000 in pole-timber stands, and 70,000 in poorly stocked stands.

Table 17.--Net board-foot volume on commercial forest land by species and county group, 1948

(Log scale, International 1/4-inch rule)

Species	Boone Kanawha	Lincoln Wayne	Logan Mingo	McDowell Wyoming	Total
	M bd. ft.	M bd. ft.	M bd. ft.	M bd. ft.	M bd. ft.
Softwoods:					
Hemlock	49,500	--	26,900	22,600	99,000
Yellow pine	188,500	1,600	40,700	11,500	242,300
All softwoods	238,000	1,600	67,600	34,100	341,300
Hardwoods:					
Sugar maple	28,800	4,700	94,000	86,800	214,300
Red maple	41,500	--	5,700	24,600	71,800
Red oak	526,100	168,700	491,400	373,000	1,559,200
White oak	111,700	66,900	57,500	42,100	278,200
Chestnut oak	167,200	18,500	141,600	338,000	665,300
Yellow birch	--	--	10,900	25,300	36,200
Beech	128,600	97,400	239,200	242,300	707,500
Ash	30,700	--	24,300	13,000	68,000
Basswood	23,300	14,100	55,500	74,300	167,200
Yellow-poplar	177,300	80,400	84,200	156,500	498,400
Cucumber	37,700	4,600	42,100	52,300	136,700
Hickory	161,800	44,000	195,200	183,200	584,200
Gum	61,200	6,600	61,900	106,200	235,900
Black walnut	12,900	--	22,900	1,700	37,500
Black locust	2,200	4,900	22,700	4,200	34,000
Other hardwoods	29,100	4,200	4,200	12,400	49,900
All hardwoods	1,540,100	515,000	1,553,300	1,735,900	5,344,300
All species 1/	1,778,100	516,600	1,620,900	1,770,000	5,685,600
Percent	31.3	9.1	28.5	31.1	100.0

1/ In addition, there are 34,400,000 board feet of dead chestnut in Boone-Kanawha Counties, 13,700,000 board feet in Lincoln-Wayne Counties, 49,700,000 board feet in Logan-Mingo Counties, and 39,500,000 board feet in McDowell-Wyoming Counties.

Table 18.--Net volume in cords of all trees on commercial forest land by species and county group, 1948

(Standard cords, including bark)

Species	Boone Kanawha	Lincoln Wayne	Logan Mingo	McDowell Wyoming	Total
	M cords	M cords	M cords	M cords	M cords
Softwoods:					
Hemlock	129	--	65	57	251
Yellow pine	624	50	112	44	830
All softwoods	753	50	177	101	1,081
Hardwoods:					
Sugar maple	179	84	313	293	869
Red maple	293	60	165	121	639
Red oak	2,352	788	1,826	1,421	6,387
White oak	674	563	340	227	1,804
Chestnut oak	1,160	214	792	1,442	3,608
Yellow birch	141	22	137	151	451
Beech	1,289	689	1,386	1,148	4,512
Ash	154	33	116	87	390
Basswood	139	75	313	399	926
Yellow-poplar	792	388	413	681	2,274
Cucumber	124	26	149	170	469
Hickory	917	392	896	937	3,142
Gum	301	35	285	459	1,080
Black walnut	43	32	79	50	204
Black locust	136	64	176	98	474
Other hardwoods	430	98	242	193	963
All hardwoods	9,124	3,563	7,628	7,877	28,192
All species 1/	9,877	3,613	7,805	7,978	29,273
Percent	33.7	12.3	26.7	27.3	100.0

1/ In addition, there are 179,000 cords of dead chestnut in Boone-Kanawha Counties, 49,000 cords in Lincoln-Wayne Counties, 210,000 cords in Logan-Mingo Counties, and 202,000 cords in McDowell-Wyoming Counties.

Table 19.--Net cubic-foot volume of all trees on commercial forest land by species, tree class, and kind of material, 1948

(Excluding bark)

Species	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.	M cu.ft.
Softwoods:					
Hemlock	16,500	2,600	200	300	19,600
Yellow pine	42,900	8,700	12,900	200	64,700
All softwoods	59,400	11,300	13,100	500	84,300
Hardwoods:					
Sugar maple	31,900	8,800	6,400	9,400	56,500
Red maple	11,000	3,200	8,300	19,000	41,500
Red oak	240,400	77,500	76,000	21,300	415,200
White oak	43,900	17,300	45,900	10,200	117,300
Chestnut oak	107,300	41,900	38,300	47,100	234,600
Yellow birch	5,600	2,200	12,500	9,000	29,300
Beech	113,900	33,000	24,700	121,700	293,300
Ash	10,800	3,300	8,200	3,000	25,300
Basswood	26,200	8,600	14,000	11,400	60,200
Yellow-poplar	76,600	22,300	47,300	1,600	147,800
Cucumber	21,900	6,500	--	2,000	30,400
Hickory	90,700	28,800	71,500	13,300	204,300
Gum	37,800	12,200	7,400	12,700	70,100
Black walnut	5,900	1,800	4,100	1,400	13,200
Black locust	5,300	2,100	14,200	9,200	30,800
Other hardwoods	8,100	3,700	40,700	10,200	1/ 62,700
All hardwoods	837,300	273,200	419,500	302,500	1,832,500
All species 2/	896,700	284,500	432,600	303,000	1,916,800
Percent	46.8	14.8	22.6	15.8	100.0

1/ Includes 20,400,000 cubic feet of so-called nonmerchantable species such as sassafras and sourwood.

2/ In addition there are 41,600,000 cubic feet of dead chestnut: 30,200,000 cubic feet in saw-timber trees, and 11,400,000 cubic feet in pole-timber trees.

Table 20.--Net volume in cords of all trees on commercial forest land by species, tree class, and kind of material, 1948

(Standard cords, including bark)

Species	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	M cords	M cords	M cords	M cords	M cords
Softwoods:					
Hemlock	212	33	3	3	251
Yellow pine	550	111	165	4	830
All softwoods	762	144	168	7	1,081
Hardwoods:					
Sugar maple	490	135	99	145	869
Red maple	170	49	127	293	639
Red oak	3,698	1,192	1,170	327	6,387
White oak	676	265	706	157	1,804
Chestnut oak	1,651	644	589	724	3,608
Yellow birch	87	33	193	138	451
Beech	1,752	508	379	1,873	4,512
Ash	166	52	125	47	390
Basswood	403	132	216	175	926
Yellow-poplar	1,178	343	728	25	2,274
Cucumber	338	100	--	31	469
Hickory	1,394	443	1,101	204	3,142
Gum	582	188	114	196	1,080
Black walnut	91	29	63	21	204
Black locust	81	33	218	142	474
Other hardwoods	124	56	626	157	963
All hardwoods	12,881	4,202	6,454	4,655	28,192
All species 1/	13,643	4,346	6,622	4,662	29,273
Percent	46.7	14.8	22.6	15.9	100.0

1/ In addition, there are 640,000 cords of dead chestnut: 465,000 cords in saw-timber trees, and 175,000 cords in pole-timber trees.

Table 21.--Net volume in cords of all trees on commercial forest land by stand-size class, tree class, and kind of material, 1948

(Standard cords, including bark)

Stand-size class	Saw-timber trees		Pole-timber trees	Cull trees	Total
	Sawlog material	Upper stems and limbs			
	M cords	M cords	M cords	M cords	M cords
Saw-timber stands:					
Medium and heavy	5,896	1,668	1,039	1,061	9,664
Light	6,539	2,186	2,821	2,028	13,574
Pole-timber stands	841	365	2,433	1,435	5,074
Other stands	367	127	329	138	961
All stands	13,643	4,346	6,622	4,662	29,273

Table 22.--Net board-foot and cubic-foot volume of all trees on commercial forest land by species group and diameter class, 1948

SOFTWOODS

Diameter class (inches)	Sawlog material (log scale, Int. 1/4-inch rule)		All material (excluding bark)	
	M bd.ft.	Percent	M cu.ft.	Percent
6	--	--	5,500	6.5
8	--	--	8,200	9.7
10	47,400	13.9	12,000	14.2
12	82,200	24.1	17,400	20.7
14	53,100	15.6	10,900	12.9
16	40,100	11.7	8,000	9.5
18	53,500	15.7	10,000	11.9
20	24,100	7.1	4,400	5.2
22	29,400	8.6	5,300	6.3
24	--	--	--	--
26	--	--	--	--
28	11,500	3.3	2,600	3.1
30 and over	--	--	--	--
All softwoods	341,300	100.0	84,300	100.0

HARDWOODS

6	--	--	125,800	6.9
8	--	--	167,100	9.1
10	--	--	159,400	8.7
12	709,800	13.3	195,800	10.7
14	698,300	13.1	187,400	10.2
16	863,400	16.2	207,300	11.3
18	817,300	15.3	195,800	10.7
20	751,000	14.0	175,200	9.6
22	684,100	12.8	166,800	9.1
24	421,300	7.9	99,800	5.4
26	181,400	3.4	47,300	2.6
28	146,700	2.7	44,700	2.4
30 and over	71,000	1.3	60,100	3.3
All hardwoods	5,344,300	100.0	1,832,500	100.0
All species	5,685,600	--	1,916,800	--

Table 23.--Species composition of each forest type group, expressed in percent of net cubic-foot volume, 1948

Species	Forest type group				
	Pine-oak	Northern hardwood	Cove hardwood	Chestnut oak	Oak-hickory
	Percent	Percent	Percent	Percent	Percent
Softwoods:					
Hemlock	9.0	1.8	0.7	--	0.4
Yellow pine	54.3	--	.4	1.7	1.5
All softwoods	63.3	1.8	1.1	1.7	1.9
Hardwoods:					
Sugar maple	--	7.3	5.1	0.4	0.7
Red maple	0.6	3.0	2.7	1.8	1.7
Red oak	10.9	3.0	8.1	15.5	42.1
White oak	3.8	.9	1.3	1.0	13.7
Chestnut oak	8.9	.6	2.0	66.4	8.9
Yellow birch	1.2	3.4	2.8	.3	.3
Beech	2.1	56.0	14.2	1.1	5.2
Ash	1.2	1.3	3.1	--	.4
Basswood	.9	4.9	7.5	--	.4
Yellow-poplar	2.1	4.5	21.2	.1	2.0
Cucumber	--	1.7	3.7	--	.7
Hickory	2.8	5.0	12.8	6.4	13.5
Gum	.8	3.3	3.2	4.3	4.3
Black walnut	--	.6	1.0	--	.8
Black locust	.2	.2	3.0	1.0	1.5
Other hardwoods	1.2	2.5	7.2	--	1.9
All hardwoods	36.7	98.2	98.9	98.3	98.1
All species	100.0	100.0	100.0	100.0	100.0

FOREST SURVEY PROCEDURE

These estimates of forest area and timber volume are based upon data obtained from a sampling of the eight counties. The following procedure was used:

Photo interpretation.--A large number of plots (about one to every 508 acres) were distributed regularly over the aerial photographs covering these counties. Photo interpreters first determined whether each plot was forest or nonforest. If forest, the stand in which the plot was located was examined by stereoscope and classified as to forest type and stand-size class (based on stand volume and density).

Ground plot examination.--The next step was to examine on the ground enough 1/5-acre forest plots randomly selected from those previously examined on aerial photos in order to establish a reliable average volume per acre from a tally of trees by species and diameters at breast height. Estimates of cull, site quality, past use, and other items also were recorded from the ground plots. An average of about one ground plot was selected to every 6,283 acres of forest land.

Compilation of data.--Photo-interpretation and field-plot data were entered on punch cards in the Upper Darby office. Tabulations were made from these data resulting in the set of tables herewith.

ACCURACY OF DATA

The number of observations taken on the aerial photographs and the number of ground plots examined in each stand-size class were designed to yield forest-area and volume estimates of the highest practicable degree of sampling accuracy for the personnel and equipment available. Some errors in the forest inventory are inescapable because: (1) area classifications may be imperfect and volume of sample trees is derived from measurements of diameter, height, and form with adjustments for estimated defect; and (2) the estimated total is obtained by "blowing up" a sample.

Errors of the first class include mistakes in measurement and judgment, imperfect volume tables, and possible faulty adjustment for defects. Every effort was made to keep such errors to a minimum and compensating, but the degree to which this may have been attained cannot be measured satisfactorily. Errors of the second class are due to failure of the sample to perfectly represent the whole. Such errors are measurable. The sampling errors for principal items for these

counties as a whole are expressed below as percentages of their respective totals:

	Percent
Forest area	± 1.1
Saw-timber area	± 5.4
Pole-timber area	± 8.7
Total board-foot volume	± 6.6
Board-foot volume in saw-timber stands	± 6.9
Total cubic-foot volume	± 4.4
Cubic-foot volume in pole-timber stands	± 10.1

If no bias and no systematic errors are assumed, it is reasonable to expect that actual areas and volumes will be within the indicated range of reported areas and volumes about two times in three, and within the range of two sampling errors about 19 times in 20. For example, the chances are about two out of three that the forest area would not differ more than 1.1 percent from that reported herein. The chances are about 19 in 20 that the forest area would not differ more than 2.2 percent or twice that for one sampling error. Corresponding statements may be made for each of the other items for which sampling errors are given.

Statistics of forest area by type, stand-size class, etc., reported in the tables herewith are subject to increasing sampling error as the class becomes finer and its numerical magnitude smaller. In general, experience to date indicates the ranges in area sampling error shown below:

Class area in acres	Approximate area sampling error in percent
Less than 50,000:	Variable, usually over 40
50,000 to 100,000:	Ordinarily between 20 and 40
100,000 to 300,000:	Usually between 10 and 20
More than 300,000:	Commonly less than 10, but may be as high as 20

Volume sampling errors are larger (in percentage) than area errors and have a tendency to vary by stand-size class. Sampling errors of board-foot data are usually larger than corresponding errors in cubic feet. The percentage additions that should generally be made to area

sampling errors in order to estimate volume sampling errors are shown below:

Stand-size class	Volume sampling errors in relation to area sampling errors	
	For board feet	For cubic feet
	Percent	Percent
Saw timber:		
Medium and heavy	Add 1	Add 1
Light	Add 2	Add 1
Pole timber	Add 6 to 10	Add 2 to 3

Board-foot and cubic-foot volumes per acre are extremely variable for seedling and sapling and poorly stocked stands. The volume sampling errors for these stand-size classes are erratic and may be from 25 to 100 percent higher than the area sampling errors.

EXPLANATION OF TERMS USED

AREA

Land area.--Includes dry land and land temporarily or partially covered by water, such as marsh land, swamps, and river flood plains, streams, sloughs, estuaries, and canals less than one-eighth of a statute mile in width; and lakes, reservoirs, and ponds having less than 40 acres of area. (See "Areas of the United States, 1940," U. S. Bureau of the Census, page 2.) Does not include water areas larger than those defined above nor deeply indented embayments and sounds and other coastal water behind or sheltered by headlands or islands separated by less than 1 nautical mile of water; and islands having less than 40 acres of area.

Forest area.--Land bearing forest growth or land from which the forest has been removed but which shows evidence of past forest occupancy and which is not now in other use. Except for right of ways of active power lines, highways, roads, and railroads that are not abandoned, strips of nonforest land less than 100 feet wide and areas of less than 1 acre surrounded by forest were classified as forest.

Commercial forest area.--Forest land bearing or capable of bearing pole-timber or saw-timber stands of commercial character and economically available now or prospectively for commercial use and not formally withdrawn from such use.

Noncommercial forest area.--Two classes of forest land are included: (1) reserved productive--forest land bearing or capable of bearing pole-timber or saw-timber stands of commercial character but formally withdrawn from commercial use for parks, preserves, wilderness areas, and so forth; and (2) nonproductive--other forest land permanently incapable of producing commercial pole-timber or saw-timber stands. The latter areas are either rocky, mountainous, or do not possess the climate and soil qualities essential for the production of commercial timber crops.

Nonforest area.--All land areas other than forest, including the acreage in cultivation and pasture less than 30 percent covered by tree canopy; land enclosed within the right of ways of active power lines, highways, roads, and railroads; abandoned roads when the soil has been removed or the pavement remains; marshes, bare rock, quarries, coal strippings, and gravel pits; water areas such as lakes, reservoirs, and ponds having less than 40 acres of area, and streams, sloughs, estuaries, and canals less than one-eighth mile in width (larger water areas are classified as "inland water" by the Bureau of the Census and are not included within land area figures); and urban and other residential and industrial areas. Narrow belts of trees such as fence rows and stream margins less than 100 feet in width and small groups of trees less than one acre in area that are surrounded by nonforest land are considered nonforest.

FOREST TYPE GROUPS

(Board-foot volume of each species in saw-timber stands and number of stems in other stand-size classes was the basis for forest type classifications. Table 4 shows the detailed forest types that are combined in each forest type group. Table 23 gives the species composition of each forest type group, expressed in percent of net cubic-foot volume.)

Pine-oak.--Stands in which the yellow pines (Virginia pine and pitch pine) are pure or comprise 20 to 74 percent of the stand in mixture with various oaks. A small area of hemlock type is included in this group.

Northern hardwood.--A mixture of hardwoods made up largely of beech, yellow birch, and sugar maple.

Cove hardwood.--A mixture of hardwoods usually found on the deep, moist sites of the coves and along the lower slopes. Yellow-poplar usually occupies a prominent position in these stands and is combined with various other hardwoods. A small area of the river birch-sycamore type is included.

Chestnut oak.--Stands in which chestnut oak is pure, or predominating in association with other oaks and hickory.

Oak-hickory.--Stands dominated principally by red and white oaks in association with hickory and other hardwoods.

STAND-SIZE CLASSES

(The minimum area classified according to stand-size was 1 acre.)

Medium and heavy saw-timber stands.--Stands that had a net volume of 5,000 board feet or more per acre.

Light saw-timber stands.--Stands that had a net volume of 1,500 to 4,999 board feet per acre.

Pole-timber stands.--Stands that had a net volume of less than 1,500 board feet per acre and at least 10 percent of the area covered by the crown canopy of pole-timber or larger trees. At least one-half the minimum stocking was in pole-timber trees. These stands generally contained at least 200 cubic feet per acre in trees 5.0 inches d.b.h. and larger.

Seedling and sapling stands.--Stands that did not qualify either as saw timber or pole timber but were well stocked with seedlings and saplings (at least 40 percent of the stand area covered by crown canopy). These stands generally contained at least 300 seedlings and saplings 1.0 to 4.9 inches d.b.h. per acre.

Poorly stocked stands.--Stands that did not qualify as saw timber or pole timber but were at least 10 percent stocked with saw-timber or pole-timber trees or with 10 to 39 percent of the crown canopy in seedlings and saplings.

Unstocked areas.--Stands that did not qualify as saw timber, pole timber, or seedling and sapling and were less than 10 percent stocked.

SITE CLASS

Site class.--Based on the average number of logs produced by mature trees in commercial forest areas. Where mature, dominant, or codominant trees were present, the following merchantable height classes, based on 16-foot logs, were used:

Site	Hardwoods	Softwoods
Good	3 or more logs	5 or more logs
Fair	1½ to 3 logs	3 to 5 logs
Poor	8 feet to 1½ logs	8 feet to 3 logs
Nonproductive	(See definition under AREA)	

Where no mature trees of the dominant or codominant crown classes were present, site was estimated from the species and growth of immature trees, the depth and type of soil, aspect, soil moisture, and the shrubby and herbaceous ground cover. Poor sites that are incapable of producing pole-timber or saw-timber stands were classed as nonproductive (noncommercial forest area).

VOLUME ESTIMATES

(Volume in trees on areas classified as nonforest is not included; all volumes are net, that is, with defect deducted.)

Board-foot volume.--Includes the sawlog material in saw-timber trees estimated through use of the International 1/4-inch log rule, which closely approximates green lumber tally for square-edged boards. Merchantable heights for sawlogs were estimated to the point at which utilization is limited by large branches, forks, or other deformities, or a d.i.b. of not less than 6 inches for softwoods and 8 inches for hardwoods. Deductions have been made for rot, crook, and other defects.

Cubic-foot volume.--Includes the sound wood, excluding bark, in: (1) the sawlog portion of saw-timber trees, (2) the upper stems of softwood saw-timber trees and the upper stems and limbs of hardwood saw-timber trees to a minimum of 4 inches inside bark, (3) the full stems of pole-timber trees to a minimum of 4 inches inside bark, and (4) the sound wood volume of cull trees. No deductions were made for defects unless they affected the wood structure.

Volume in cords.--This volume was derived from the net cubic-foot volume (excluding bark) by applying a factor of 78 cubic feet per cord for softwoods and 65 cubic feet per cord for hardwoods. Although the number of cubic feet per cord varies with the size of material, these converting factors were used for all material in this report. The resulting figures approximate the volume of a standard stacked cord (4 feet by 4 feet by 8 feet), including bark. No deductions were made for defect unless they affected the wood structure.

TREE CLASSES

Saw-timber tree.--A softwood tree at least 9.0 inches d.b.h. (diameter outside bark at 4½ feet above the ground on the upper side of the tree) or a hardwood tree at least 11.0 inches d.b.h. with a sound log at least 8 feet long and with at least half of the gross volume of the tree in merchantable material.

Pole-timber tree.--A tree that ranged from 5.0 inches d.b.h. up to

the minimum saw-timber tree size and that gave promise of becoming a merchantable saw-timber tree.

Cull tree.--A tree that did not qualify as a saw-timber or pole-timber tree because of poor form, limbiness, rot, or other defect.

Tree-diameter class.--Each 2-inch diameter class included all trees measured in the range from 1.0 inch below the midpoint of the class up to but not including 1.0 inch above the midpoint. For example, the 6-inch class included all trees whose diameters fall in the range of 5.0 inches up to but not including 7.0 inches.

SPECIES

The various tree species found in this area are listed below. Approved common names [1/] are shown in parentheses if these differ from the brief name used in the tables. Approved scientific names [1/] are underlined. If two or more species are included under a single name in the tables, the various species are listed or the word "species" appears after the approved scientific name for the genus.

Softwoods

Hemlock (Eastern hemlock)	- Tsuga canadensis
Yellow pine (Pitch pine)	- Pinus rigida
(Virginia pine)	- Pinus virginiana

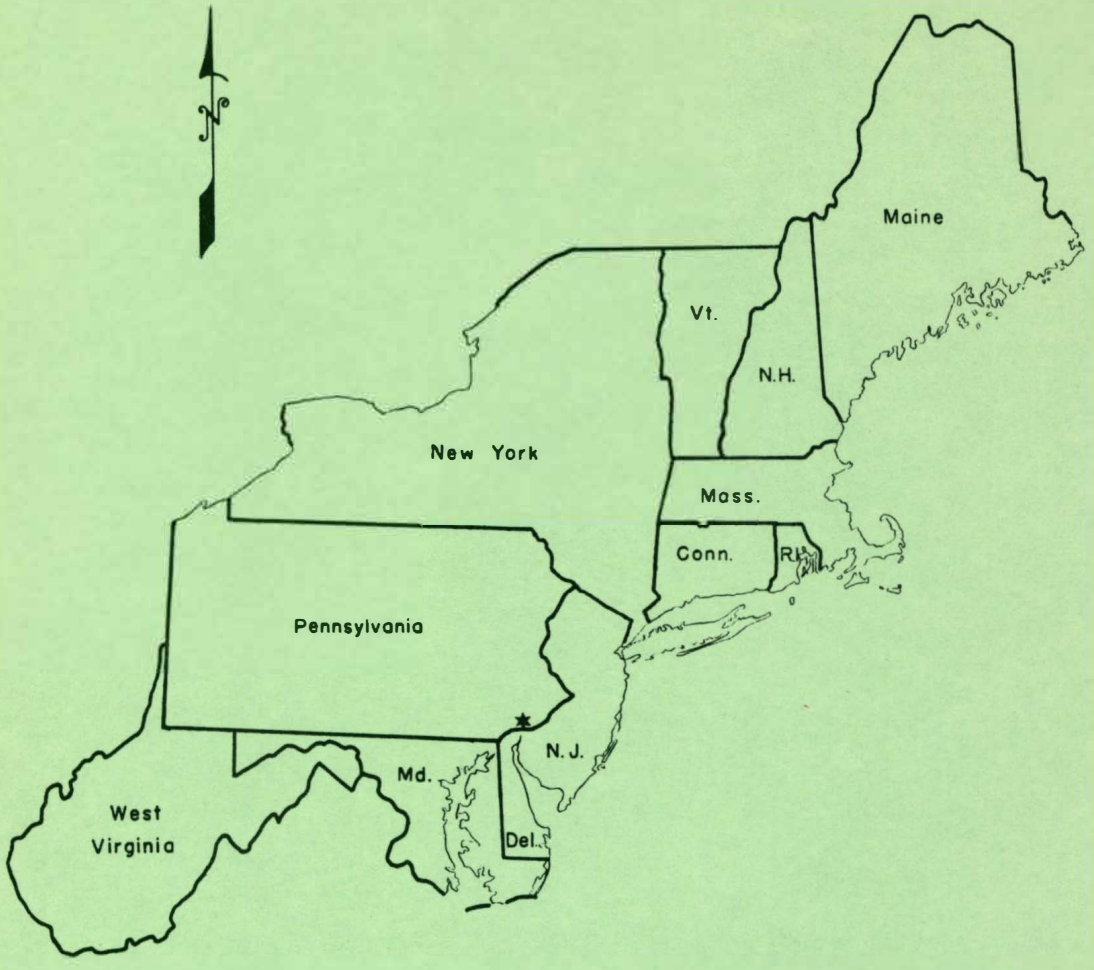
Hardwoods

Sugar maple	- Acer saccharophorum
Red maple	- Acer rubrum
Red oak (Northern red oak)	- Quercus borealis
(Black oak)	- Quercus velutina
(Scarlet oak)	- Quercus coccinea
White oak	- Quercus alba
Chestnut oak	- Quercus montana
Yellow birch (Yellow birch)	- Betula lutea
(Sweet birch)	- Betula lenta
Beech (American beech)	- Fagus grandifolia
Ash	- Fraxinus species
Basswood (American basswood)	- Tilia americana
Yellow-poplar	- Liriodendron tulipifera
Cucumber (Cucumbertree)	- Magnolia acuminata
Hickory	- Carya species

1/ U. S. Forest Service. Check list of the native and naturalized trees of the United States, including Alaska. U. S. Dept. Agr. 325 pp. 1944.

Hardwoods (Continued)

Gum (Blackgum)		- Nyssa sylvatica
Black walnut		- Juglans nigra
Black locust		- Robinia pseudoacacia
Other hardwoods	(American elm)	- Ulmus americana
	(Butternut)	- Juglans cinerea
	(American sycamore)	- Platanus occidentalis
	(Yellow buckeye)	- Aesculus octandra
	(Sassafras)	- Sassafras albidum
	(Sourwood)	- Oxydendrum arboreum



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